Sheepnose

Plethobasus cyphyus

Guidelines for Landowners Using Conservation Practices

Missouri Department of Conservation

Common name ▪ Sheepnose
Scientific name ▪ *Plethobasus cyphyus*
State status ▪ Endangered
Federal status ▪ Candidate

Photo Credit:
http://www.inhs.uiuc.edu/cbd/musselmanual/page50_1.html

Ecology

In Missouri, the sheepnose is limited to the Meramec River basin in the east-central part and the upper Mississippi River in the northeastern part of the state. It has been found in a range of substrates, but in the Meramec River seems to prefer a sand-gravel-cobble substrate in swift to moderate current. It can be found in water that is a few inches to 2 feet deep.

Mussels are filter feeders that collect food particles from the water and in doing so also remove unwanted toxins. A diverse, viable, and reproducing freshwater mussel population is an indicator of good long-term water quality. Mussels are long-lived species, and a single, acute pollution event can have devastating results, requiring years for recovery. Many mussel populations today are comprised mainly of older-aged individuals. This indicates that little or no reproduction is taking place and that a more chronic negative condition exists in the watershed. Despite efforts to conserve Missouri's native mussel fauna, many populations continue to decline. Efforts should be made to ensure our waterways are healthy through protection and/or restoration of habitat for this and other aquatic species.

Almost all mussel species require a fish host to complete their life cycle. Mature mussels release glochidia (the immature parasitic stage), which must attach to the gills or fins of a host to complete their development. After an average of 2 to 4 weeks, newly developed juveniles drop from the host and burrow into the substrate and grow to repeat the cycle if dropped into suitable habitat. Little is known about the life history of the sheepnose. The species is thought to spawn in the spring, with gravid females releasing glochidia through July. The sheepnose reportedly uses the sauger as its fish host. Ecological well-being of the host population is critical to the long-term viability of all mussel populations. In some cases, host species are also threatened or endangered. Refer also to the Best Management Practices for that host species, if applicable.

Reasons for Decline

Historically, sheepnose populations extended throughout river systems in much of the midwestern United States, from Minnesota south to Louisiana, and Iowa east to Ohio. Although little research has been done specifically on this species, the sheepnose is like most mussels in that its population has continued to decline over the last few decades. Reasons for the decline of sheepnose and other mussel species include alteration and degradation of habitat as a result of rural and urban development, increases in pollution and sedimentation, and reductions in host populations. Practices such as dam construction, dredging and channelization projects, improper and untimely sand and gravel mining, removal of trees and undergrowth along stream banks, and continued nonpoint source pollution (runoff) from rural and urban areas have contributed to the decline of this species in Missouri. These practices have reduced and destabilized available habitat, increased

stagnation of bottom waters, increased pollution and sedimentation, and are detrimental to the mussel itself by directly harming individuals and disrupting reproduction.

The spread of zebra mussels presents another problem for native mussels. Zebra mussels can attach to and smother native mussels. Their presence in a waterway can dramatically alter the ecosystem to the detriment of native species. To prevent the spread of this invasive species, all equipment that enters the waterway should be washed with hot water and checked for zebra mussels before entering another body of water. Additional information about controlling the spread of zebra mussels can be obtained from the Missouri Department of Conservation.

Adverse Practices

- Dredging, channelization, gravel mining activities and other practices that disturb riffle areas or alter stream gradient in any fashion may destroy or destabilize sheepnose habitat and be detrimental to the mussel itself by directly harming individuals and disrupting reproduction.
- Constructing dams and other impoundment structures on streams that contain possible habitat for the sheepnose or its host fish. Culverts, fords, and stream crossings that can create a barrier to fish passage or restrict stream flow.
- Overlooking erosion and ignoring sediment control.
- Unnecessary vehicle and equipment stream crossing.
- Removing or degrading the riparian corridor near springs and along streams, and uncontrolled livestock access to forested riparian corridors and streams.
- Unmanaged application of pesticides, animal waste or fertilizers that destroy or degrade habitats that support populations of this species.
- Allowing household, industrial, and agricultural contaminants to get into nearby creeks and streams can adversely affect the sheepnose, and other mussel species.

Recommendations

Habitat availability and water quality are likely the limiting factors for the sheepnose. A survey of the waterways in the project area should be conducted by a trained biologist in order to identify occurring populations of this species. Consider the balance between adverse and beneficial practices when determining the overall effect of a conservation practice.

Refer to Management Recommendations for Construction Projects Affecting Missouri Streams and Rivers for recommendations on stream access and staging areas, riparian corridor management, and bank and channel management. Follow proper sand and gravel removal procedures outlined in the Missouri Instream Sand and Gravel Removal Guidelines prepared by the Missouri Departments of Conservation and Natural Resources. Guidelines include the following: leave a minimum 20-foot buffer zone between the water line and the excavation area, do not mine within 20 feet of streamside vegetation, and do not alter stream channels.

All equipment should be washed with hot water and checked for zebra mussels before entering the waterway and after removal. This will help prevent the spread of this invasive species that can negatively affect mussel species like sheepnose and other native aquatic organisms.

Beneficial Practices

- No work should be conducted below the high bank of the stream from April 1 and July 31, the spawning period of this mussel to allow for successful reproduction and recruitment of sheepnose.
- Avoid constructing stream crossings. If not possible, culverts and stream crossings should be constructed with the same bottom elevation as the existing streambed to avoid obstructing fish passage.
- Limit livestock access to streams. Move watering areas into pastures and away from streams.
- Maintain and re-establish forested riparian corridors at least 100-feet wide along streams where this species occurs to reduce erosion and capture nutrient rich runoff. Exclude livestock with fences to allow the area to naturally re-vegetate.

- Nutrient and pest management on adjacent agricultural fields, that results in better utilization of materials and/or reduced chances or runoff.
- Erosion and sediment control practices that prevent the delivery of sediment to the aquatic system will prove beneficial to this species and should be implemented, maintained and monitored for the duration of the project.
- Use appropriate methods to prevent or contain the runoff of household, industrial or agricultural contaminants such as oil, gasoline, pesticides, herbicides, etc., into nearby streams and rivers. Manage stormwater in urban areas to prevent changes in the quality and hydrology of receiving streams.

Information Contacts

Missouri Department of Conservation
Policy Coordination Section
P.O. Box 180
2901 W. Truman Blvd
Jefferson City, MO 65102-0180
Telephone: 573-751-4115
http://www.mdc.mo.gov/nathis/endangered/

Missouri Department of Natural Resources
Division of Environmental Quality
P.O. Box 176
Jefferson City, MO 65102-0176
Telephone: 800-361-4827 / 573-751-1300
http://www.dnr.mo.gov/env/index.html

U.S. Army Corps of Engineers
Regulatory Branch
700 Federal Building
601 E. 12th Street
Kansas City, MO 64106-2896
Telephone: 816-389-3990
http://www.nwk.usace.army.mil/

U.S. Environmental Protection Agency
Water, Wetlands, and Pesticides Division
901 North 5th Street
Kansas City, KS 66101
Telephone: 913-551-7003 / 800-223-0425
http://www.epa.gov/region7/

U.S. Fish and Wildlife Service
Ecological Services Field Office
101 Park DeVille Dr., Suite A
Columbia, MO 65203
Telephone: 573-234-2132
http://www.fws.gov/midwest/partners/missouri.html

Legal

The Missouri Department of Conservation prepared these guidelines for conservation practices with assistance from other state agencies, contractors, and others to provide guidance to those people who wish to voluntarily act to protect wildlife and habitat.

Compliance with these management guidelines is not required by the Missouri wildlife and forestry law or by any regulation of the Missouri Conservation Commission. Other federal, state or local laws may affect construction practices.

"State Endangered Status" is determined by the Missouri Conservation Commission under constitutional authority, and specific requirements for impacts to such species are expressed in the Missouri Wildlife Code, rule 3 CSR 10-4.111.

Species listed under the Federal Endangered Species Act must be considered in projects receiving federal funds or requiring permits under the Clean Water Act, with compliance issues resolved in consultation with the U.S. Fish and Wildlife Service.